



State of Vermont
Division of Policy, Planning and Intermodal Development
219 North Main Street
Barre, VT 05641
vtrans.vermont.gov

[phone] 802-828-1647
 [fax] 802-828-3983
 [ttd] 800-253-0191

Agency of Transportation

MEMO

To: Abbie Sherman
 Executive Director Vermont Economic Progress Council
 Vermont Agency of Commerce & Community Development
From: Joe Segale, PE/PTP JS 2/25/2022
 Policy, Planning and Research Bureau Director
Re: Killington TIF District Application
Date: February 25, 2022

Per your request, I have reviewed the transportation related infrastructure costs that support the Town of Killington's January 2022 TIF District Application.

The transportation improvements are described in the Killington Road Master Planning Study (VHB, August 26, 2021) and generally include the full-depth reconstruction of Killington Road including new culverts, retaining walls and ditching; sidewalks and shared use paths along the length of Killington Road; new crosswalks including two with flashing beacons; intersection modifications including the installation of two traffic signals; and changing the profile of the Killington Road approach to US 4.

VHB estimated the total cost of the improvements to be \$21,660,000. We reviewed the line items in the construction cost estimate table presented in Appendix 4 of the Killington Road Master Planning Study relative to the Agency's bid history for similar line items and other standard practices. Appendix 4 is attached for reference. For the reasons described below, I recommend increasing the cost estimate to a total of \$25,640,000.

- There is a math error in the subtotal of construction costs in Appendix 4. The subtotal for construction costs of \$15,361,450 should be \$15,756,500. When combined with the percentage-based contingency, mobilization, engineering, and resident engineer costs, the total difference is \$556,820.
- The "Full Depth Roadway Construction" line item is low compared to the Agency's cost/mile bids for rural road reconstruction projects. The cost difference appears to be due to a lack of a sand borrow layer on the roadway typical section. Given the altitude and mountainous terrain of Killington Road, adding a sand layer is recommended to reduce damage to pavement during freeze/thaw cycles.
- The retaining wall unit price of \$80/square foot is significantly lower than the Agency's bid prices which range from \$158/sf to \$280/sf (average \$220/sf).
- The assumed rate for mobilization of 6% is lower than the Agency's practice of at least 8%, and often 10%.

The attached table shows the revised cost estimate with these modifications.



Killington TIF District Application
February 25, 2022
Page 2 of 2

Right-of-way acquisition and traffic control are two cost uncertainties to monitor as the design is refined. There may be additional costs for acquiring right-of-way because the design appears to encroach on some adjacent parcels. Based on the Agency's experience constructing many projects, the total cost for traffic control of \$100,000, which admittedly is difficult to estimate, may only be adequate to cover changing the profile on the Killington Road approach to US 4. The contingency of almost \$2.7 million will help mitigate these cost risks to some extent.

Please feel free to contact me with any questions or comments at joe.segale@vermont.gov or at 802-477-2365.



Killington Road Master Planning Study (VHB, August 26, 2021)

Appendix 4 – Conceptual Cost Estimate

Construction Costs

	Description	Unit Cost	Quantity	Total Cost
1	Reprofile 1000' of Killington Road at US-4 intersection	Lump Sum	1	\$1,615,000
2	Full Depth Roadway Construction – Typical 3 Lane Section	\$322 / LF	13,975 LF	\$4,500,000
3	Full Depth Roadway Construction – 4 Lanes Section (+1 turn lane, bus lane, etc)	\$410 / LF	5,275 LF	\$2,161,500
4	East Mountain Road	\$303 / LF	1,300 LF	\$395,000
5	Cement Concrete 6' Sidewalks	\$125 / LF	5,682 LF	\$710,250
6	Bituminous 8' Shared Use Path	\$100 / LF	14,862 LF	\$1,486,200
7	Retaining Walls	\$80 / SF	3,282 SF	\$262,550
8	Bus Shelters	\$10,000 / EA	17	\$170,000
9	Pedestrian Flashing Beacons (RRFBs)	\$10,000 / EA	4	\$40,000
10	Street Lighting	Lump Sum	n/a	\$2,516,000
11	Culverts & Drainage Ditches	Lump Sum	n/a	\$1,000,000
12	Traffic Control	Lump Sum	n/a	\$100,000
13	Signing and Striping	Lump Sum	n/a	\$100,000
14	Landscaping	Lump Sum	n/a	\$100,000
15	Traffic Signal Systems	\$300,000 / EA	2	\$600,000
	Subtotal			\$15,361,450
	15% Contingency			\$2,304,200
	6% Mobilization			\$921,700
	10% Engineering & Design			\$1,536,200
	10% Resident Engineer			\$1,536,200
	TOTAL (ROUNDED)			\$21,660,000

Total should be \$15,756,500

Total should be \$22,216,820

Killington Road Master Plan Construction Cost Estimate with VTrans Recommended Modifications

February 25, 2022

Item	Description	Unit Cost	Quantity	Item Total	Modifications
1	Reprofile 1000' of Killington Road at US-4 intersection	1 Lump Sum	n/a	\$1,615,000	
2	Full Depth Roadway Construction – Typical 3 Lane Section	\$404 /LF	13,975	\$5,641,708	Added \$81.70 per lf to account sand borrow
3	Full Depth Roadway Construction – 4 Lanes Section (+1 turn lane, bus lane, etc)	\$519 /LF	5,275	\$2,737,725	Added \$109 per lf to account sand borrow
4	East Mountain Road	\$303 /LF	1,300	\$393,900	
5	Cement Concrete 6' Sidewalks	\$125 /LF	5,682	\$710,250	
6	Bituminous 8' Shared Use Path	\$100 /LF	14,862	\$1,486,200	
7	Retaining Walls	\$220 /SF	3,282	\$722,040	Changed unit cost from \$80/sf to \$220/sf
8	Bus Shetlers	\$10,000 /EA	17	\$170,000	
9	Pedestrian Flashing Beacons (RRFBs)	\$10,000 /EA	4	\$40,000	
10	Street Lighting	1 Lump Sum		\$2,516,000	
11	Culverts & Drainage Ditches	1 Lump Sum	n/a	\$1,000,000	
12	Traffic Control	1 Lump Sum	n/a	\$100,000	
13	Signing and Striping	1 Lump Sum	n/a	\$100,000	
14	Landscaping	1 Lump Sum	n/a	\$100,000	
15	Traffic Signal Systems	\$300,000 EA	2	\$600,000	
Sub-Total				\$17,932,823	
15%	Contingency			\$2,689,923	
8%	Mobilization			\$1,434,626	Changed mobilization from 6% to 8%
10%	Engineering & Design			\$1,793,282	
10%	Residential Engineer			\$1,793,282	
Total				\$25,643,936	